

DEFENCE



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**Overview of
Information Systems Sector
DRDC Valcartier**

Allan Gibb

allan.gibb@drdc-rddc.gc.ca

11 September 2002



Defence Research and
Development Canada

Recherche et développement
pour la défense Canada

Canada

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Defence Research and Development Canada

- Agency within Canadian Department of National Defence
- Mission – provide S&T leadership to the Department
- Approximately 1000 people distributed over 6 sites
 - Corporate Headquarters, Ottawa, Ontario
 - Defence R&D Canada - Suffield, Alberta
 - Defence R&D Canada - Toronto, Ontario (was DCIEM)
 - Defence R&D Canada - Ottawa, Ontario
 - Defence R&D Canada - Valcartier, Quebec City, Quebec
 - Defence R&D Canada - Atlantic, Halifax, Nova Scotia

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Organizational Factors

- R&D Branch changed status to Special Operating Agency 1 Apr 00
- Business-oriented approach
- Program organized into thrusts, e.g Information Operations
- Thrusts consist of series of projects
- Projects have definite aim and objectives, milestones, deliverables, duration.

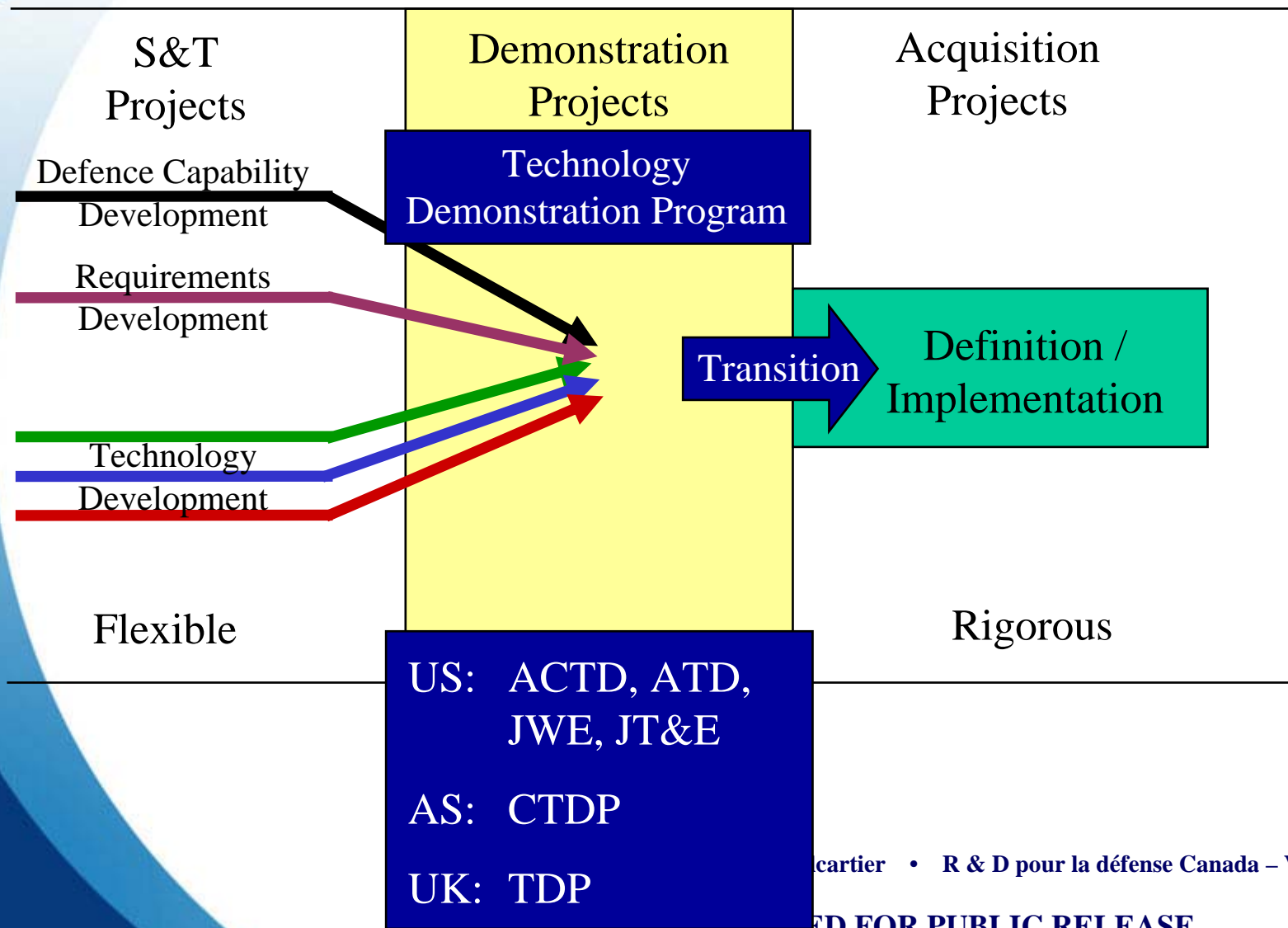


Organizational Factors

- Projects consist of activities
 - Technology investigation (research)
 - Technology application (development)
 - Technology Investment Fund
 - Defence Industrial Research Program
- Technology demonstration program
 - Demonstrate potential utility of new technology (ies) or concepts
 - Nominal limit of \$5M internal funding
 - Fast track approval, duration nominally three years



Technology Demonstration Program



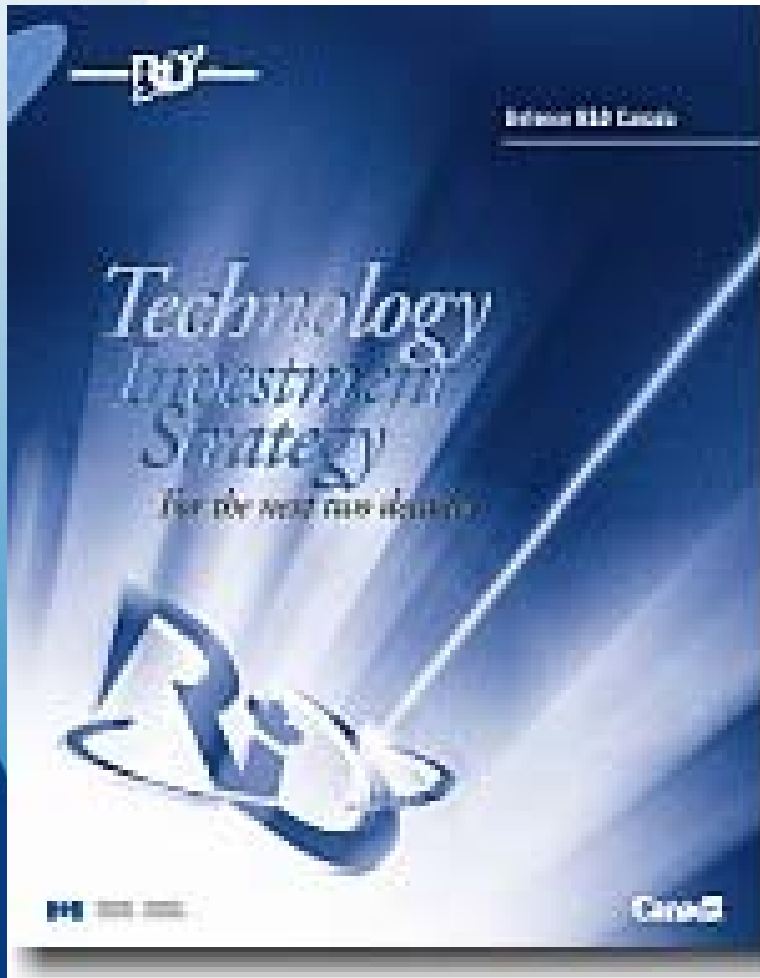


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- Approximately 340 people
- Three scientific sectors, nine sections
 - Optronics Systems
 - Combat Systems
 - Information Systems
- Remainder of presentation focusses on **Information Systems** sector



Information Systems Sector Activities



- **Information and Knowledge Management,**
- **Human Factor Engineering and Decision Support Systems,**
- **Command and Control Information Systems,**
- **Performance and Experimentation,**
- **Simulation, Modeling, Acquisition, Rehearsal, Requirements and Training**

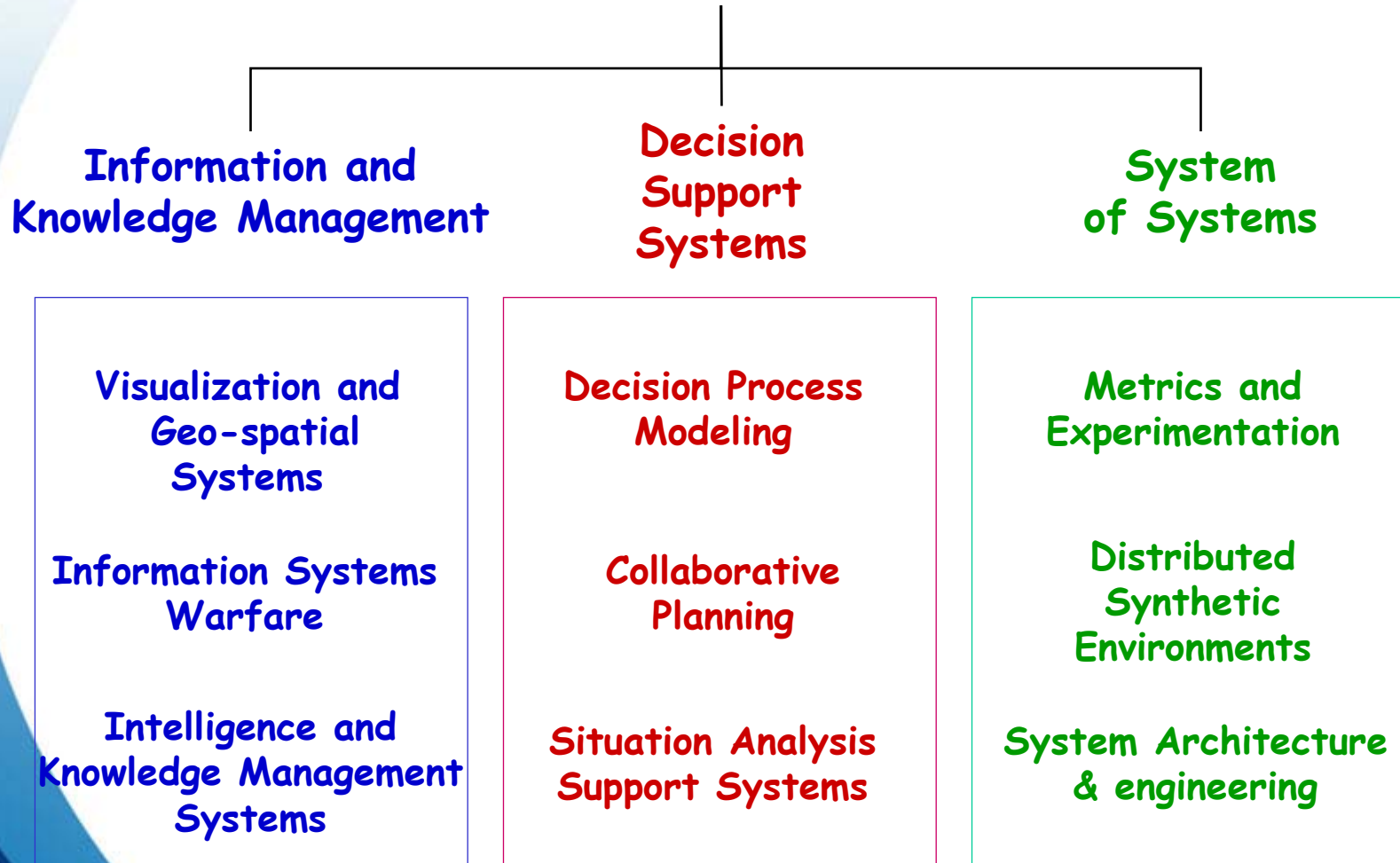
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Information Systems Sector

3 sections



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Information Systems Sector

3 sections

Information and Knowledge Management

**Visualization and
Geo-spatial
Systems**

**Information Systems
Warfare**

**Intelligence and
Knowledge Management
Systems**

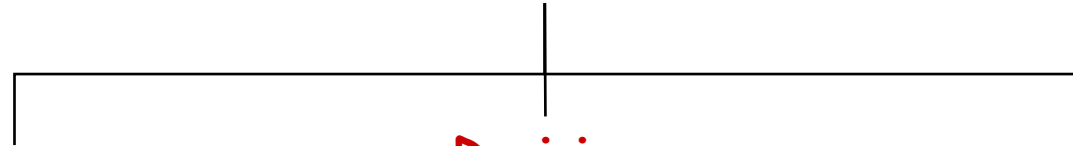
Advance techniques,
architectures and tools to
enhance:

- CF capability to achieve information superiority through dominant battlespace awareness and knowledge.
- DND capability to manage corporate knowledge.



Information Systems Sector

3 sections



Decision Support Systems

Decision Process Modeling

Collaborative Planning

Situation Analysis Support Systems

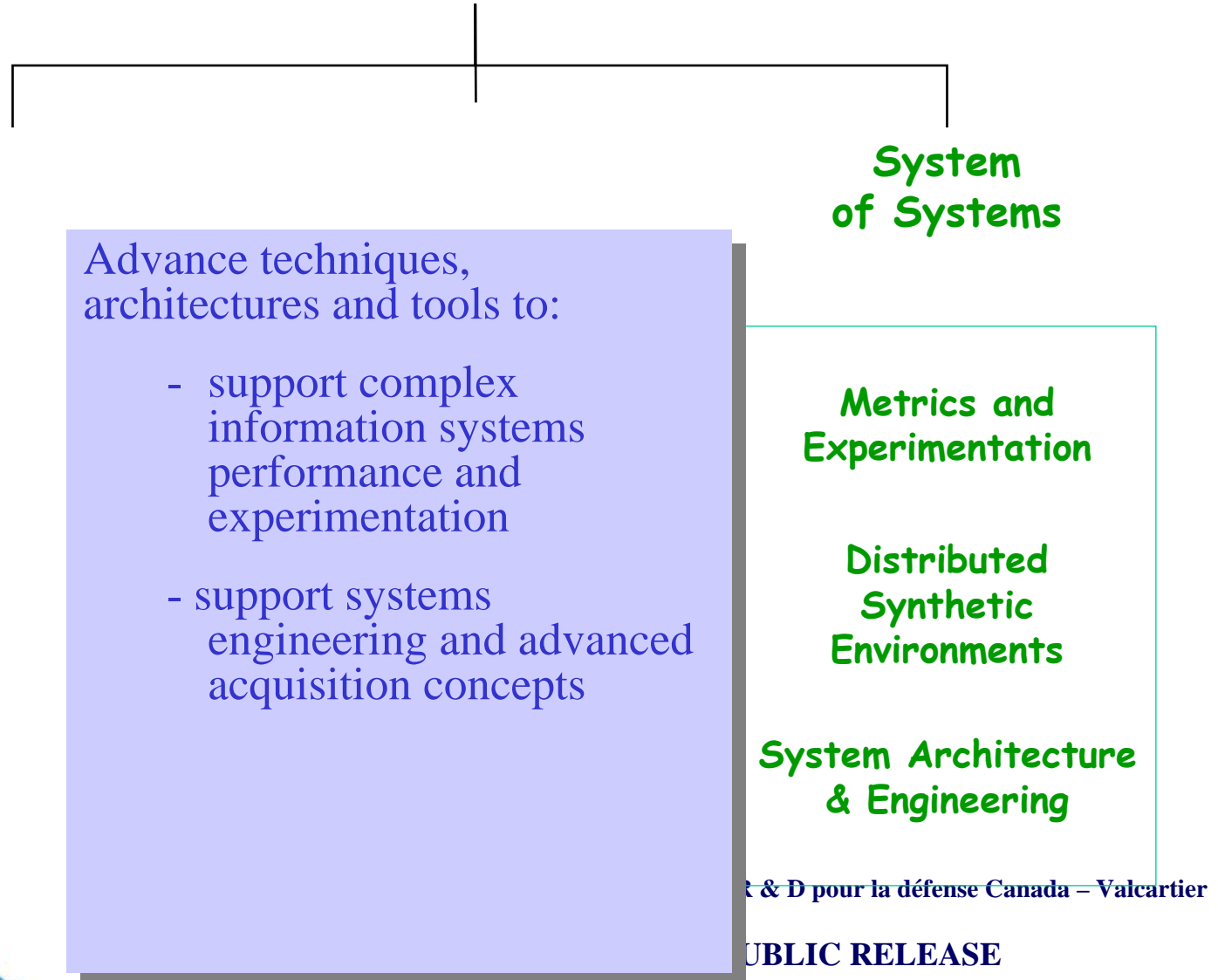
Advance concepts, techniques and tools to enhance:

- the decision making process by identifying COA
- real-time situation understanding
- implementation of the appropriate actions once a decision is made



Information Systems Sector

3 sections





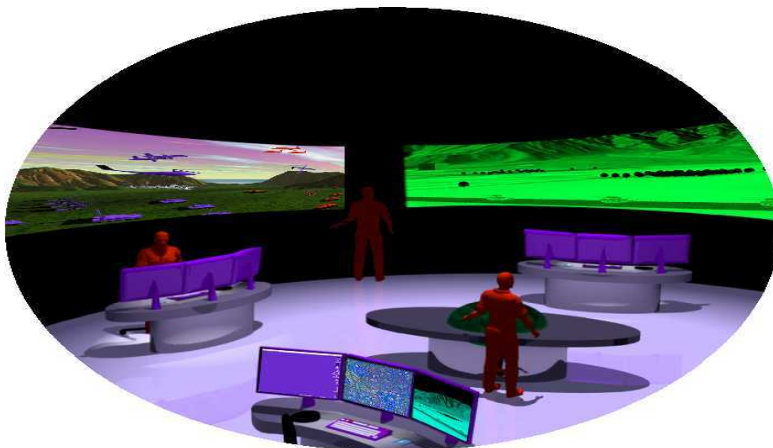
Some Projects/Environments

- COP21 TD
- LIEWA/ISTAR TD
- HCTCN TD
- Urban Ops



COP 21 TD

Common Operational Picture for the 21st Century Technology Demonstration



What is a COP?

The **integrated capability** to **receive, correlate** and **display** a common operation picture, including planning applications and theatre-generated overlays/projections.

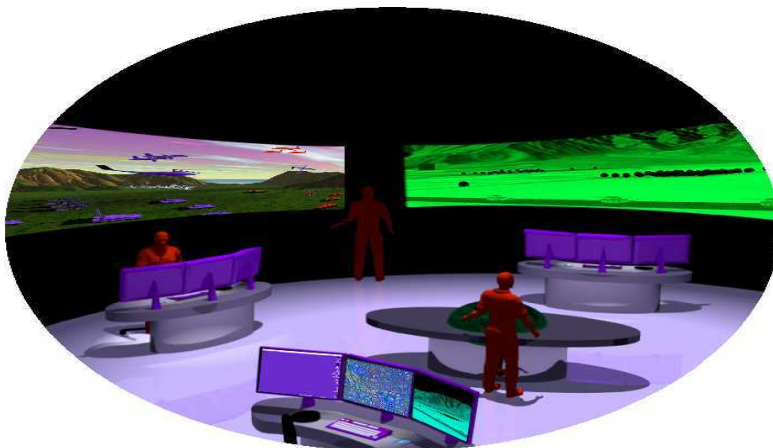
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COP 21 TD

Common Operational Picture for the 21st Century Technology Demonstration



Objective:

Demonstrate in an **interactive** manner innovative technologies that could influence **concepts**, **doctrine** and **capabilities** of the COP of the future and ensure **risk mitigation**.



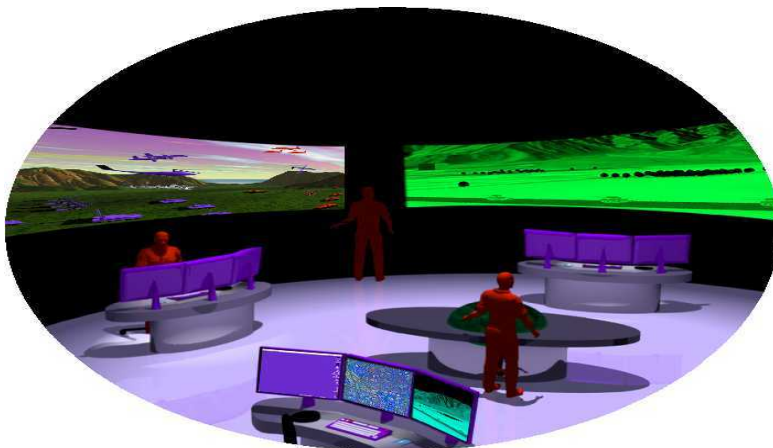
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COP 21 TD

Common Operational Picture for the 21st Century Technology Demonstration



Challenges:

- Information Fusion
- Knowledge Management
- Decision Aids
- Visualisation
- Conceptual Operational Architecture
- Interoperable Architecture



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LIEWA / ISTAR TD

Sensors - Data collection

Pre-processing

All-source Fusion
Intelligence

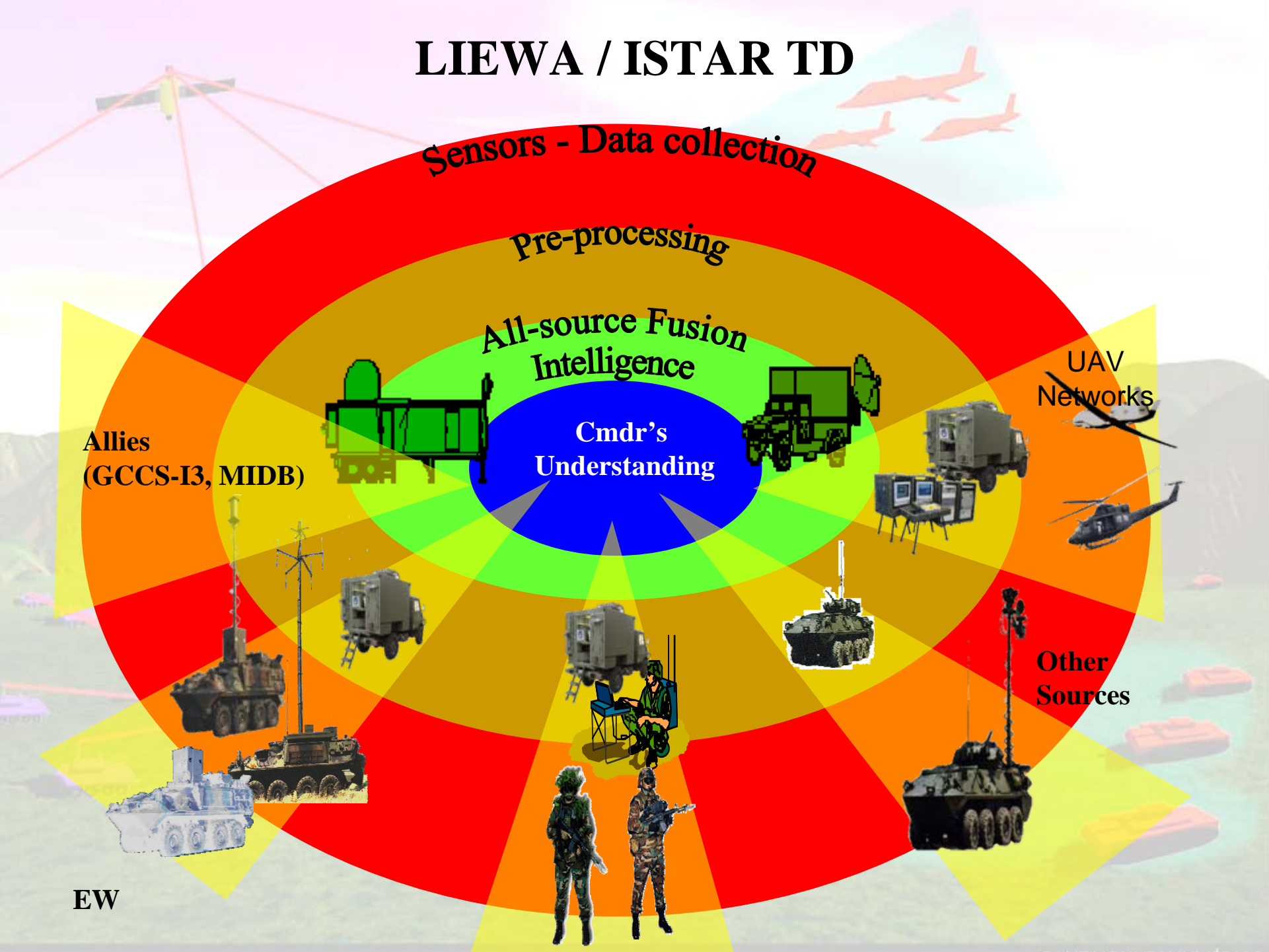
Cmdr's
Understanding

Allies
(GCCS-I3, MIDB)

UAV
Networks

Other
Sources

EW



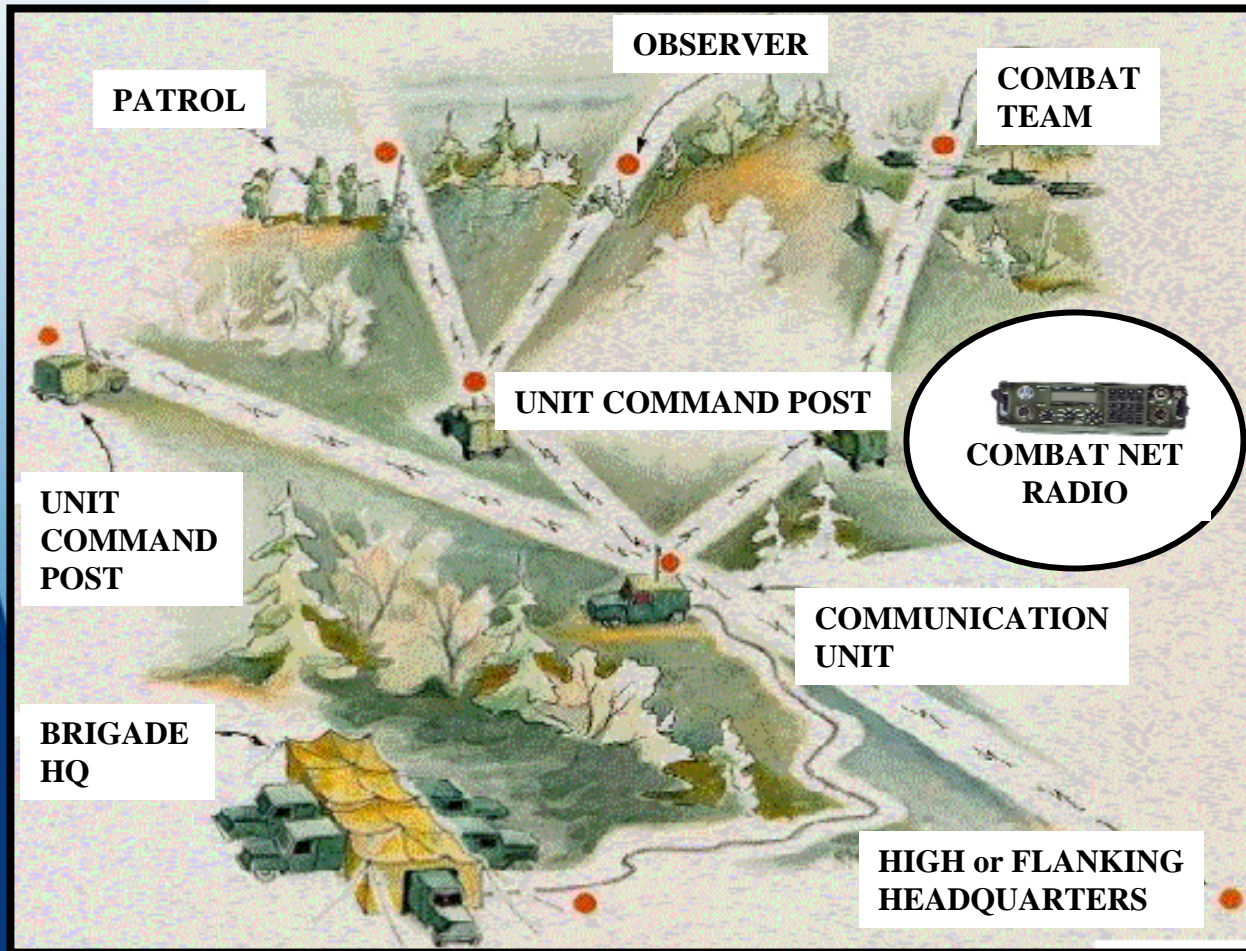


ISTAR TD Objective

- Demonstrate how **innovative** techniques for automation will enable analysts to:
 - Better coordinate multi-source collection of information;
 - Achieve enhanced battlefield understanding and situational awareness;
 - Facilitate the generation of ISTAR all source products;
 - Disseminate them efficiently and in a timely manner.



HCTCN TD (High Capacity Tactical Communications Network)



Objective:

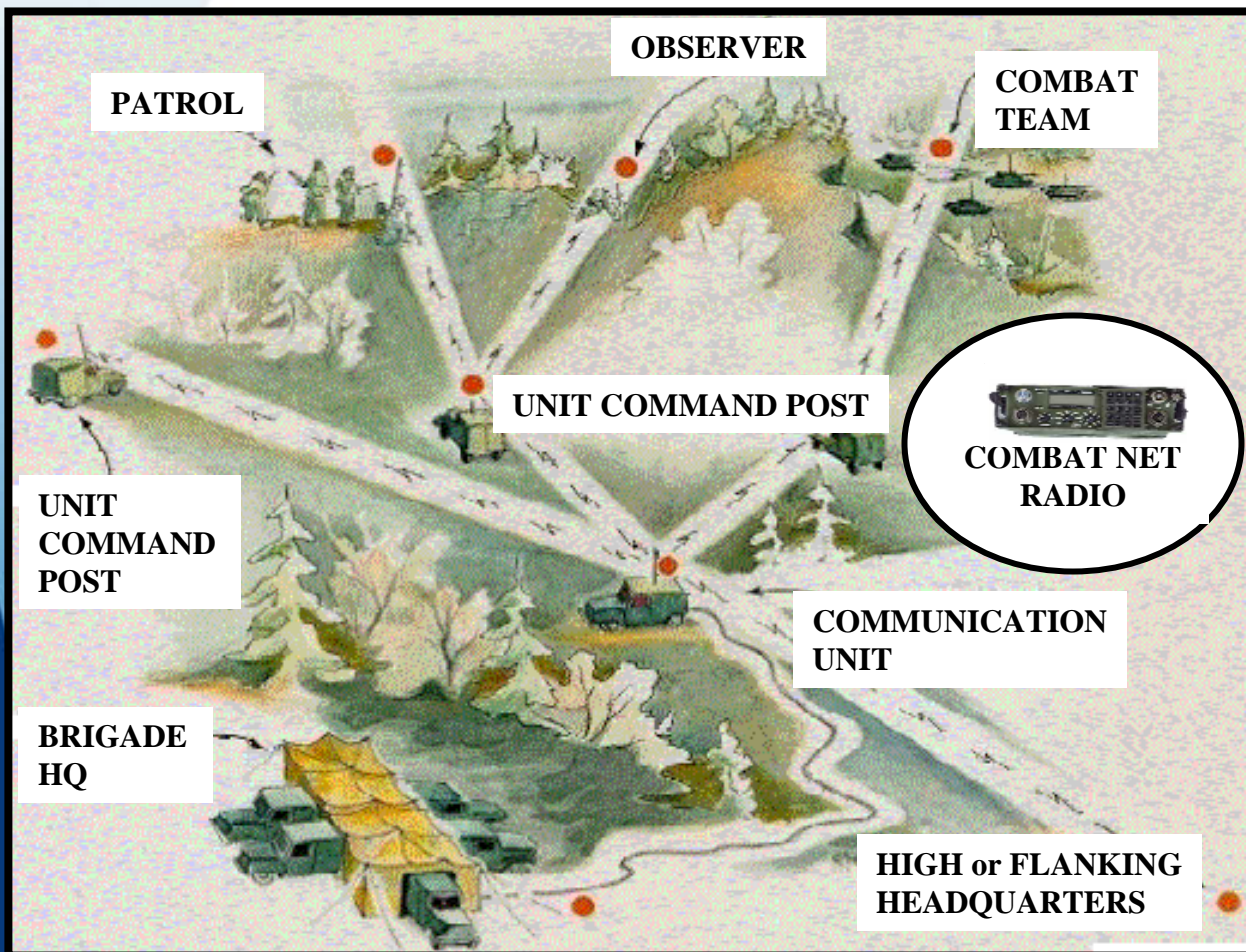
Demonstration of selected technologies in fields of wireless communications and information management that can increase the limited capacity of tactical communications systems to support command and control systems

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HCTCN TD (High Capacity Tactical Communications Network)



Major Objectives:

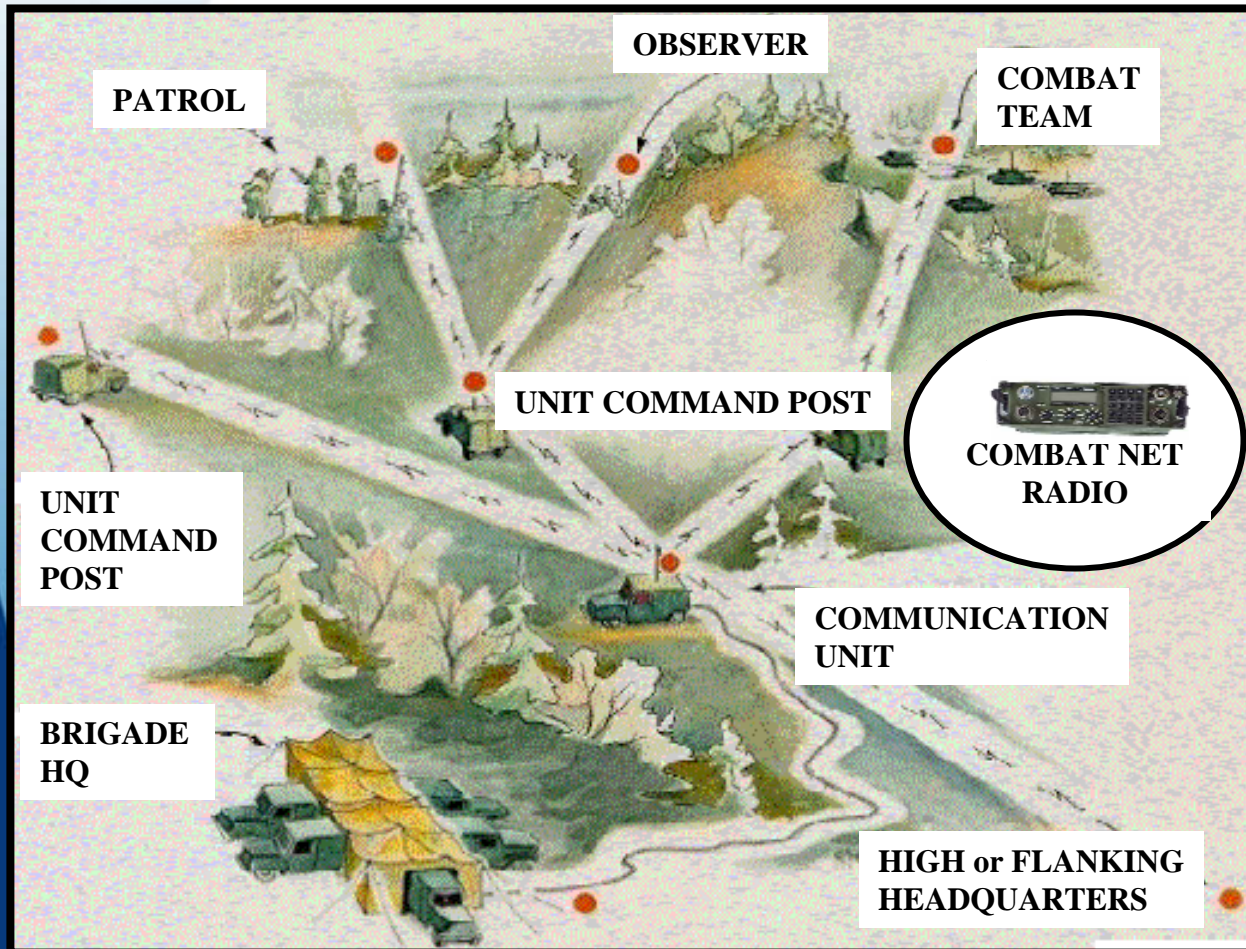
- High Capacity Tactical Mobile Radios
- Tactical Networking
- Information Management

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HCTCN TD (High Capacity Tactical Communications Network)



High Capacity Tactical Mobile Radios:

Increase data rate of CNR(P)

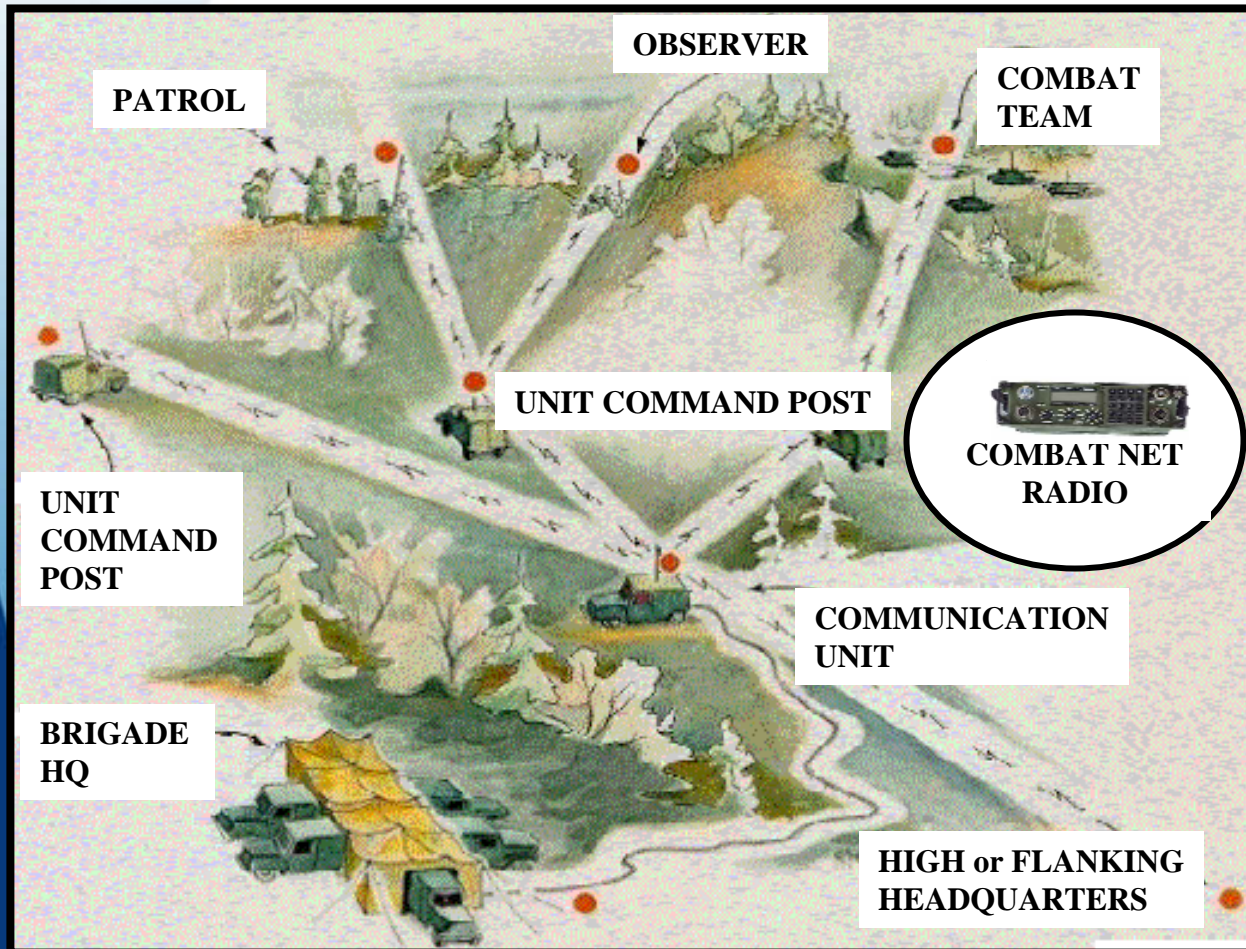
Communications Research Center

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HCTCN TD (High Capacity Tactical Communications Network)



Tactical Networking:

Demonstrate quality-of-service based, self-organizing, self-healing, integrated mobile network

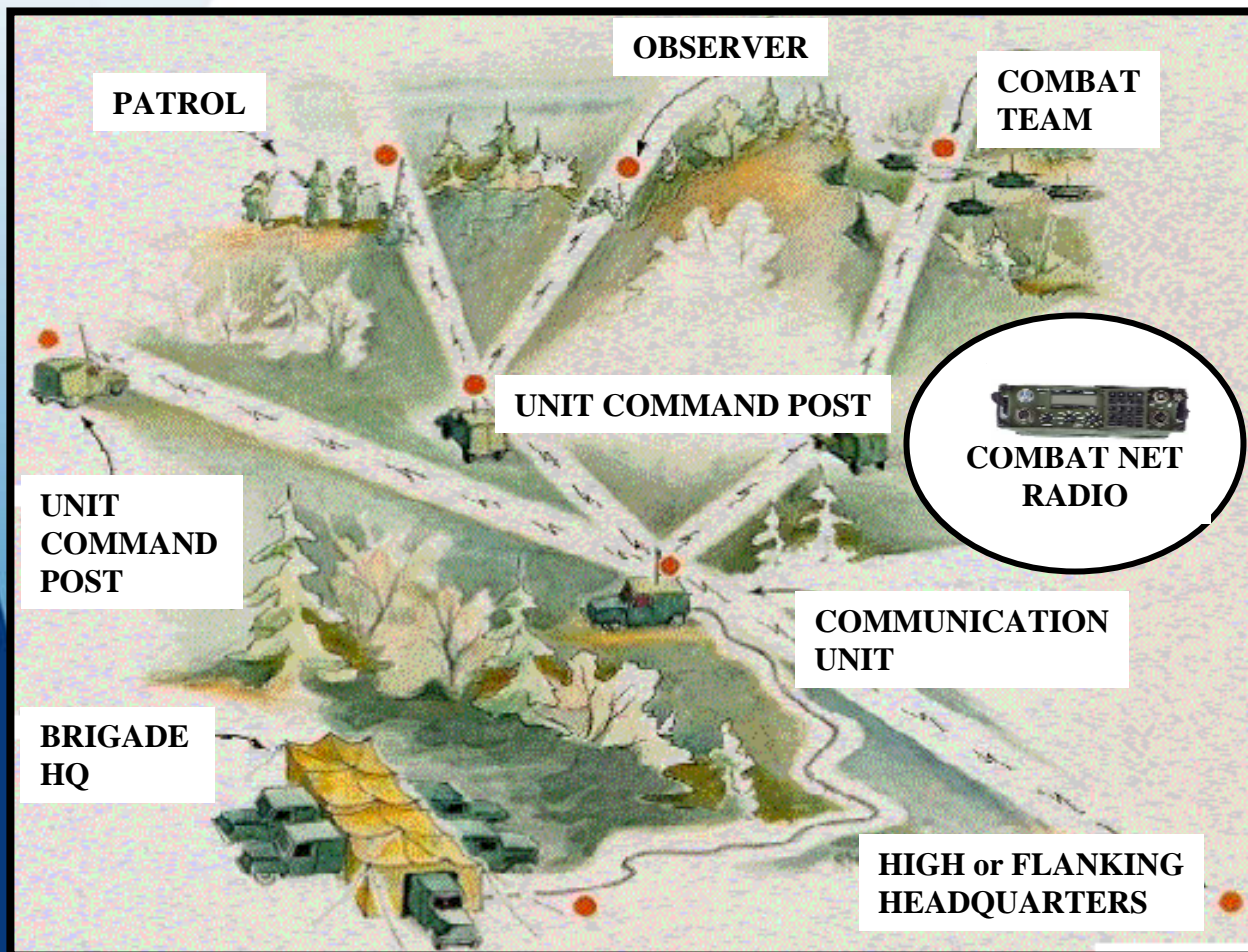
Communications
Research Center

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HCTCN TD (High Capacity Tactical Communications Network)



Information Management:

Demonstrate adaptive strategies to optimize the flow of information in low bandwidth tactical mobile environment

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Urban Operations



Summit of the Americas
Quebec City

Demonstration of
technologies and
requirements capture

Performed in Collaboration
with **Harris Corporation**

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Urban Operations



Where we are:

Identifying Canadian and NATO priorities & niches

On-going knowledge engineering w.r.t. urban ops

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